

Nuclear Data Needs in Korea

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KAERI nuclear data group now belongs to Nuclear Physics Application Research Division, where the fusion engineering and the nuclear data teams merged since the KAERI's 2020 restructuring. The mission and size of the group are unchanged, but priority is slightly shifted toward the neutron sources, nuclear detectors, and accelerator applications.

Deuteron-induced neutron double differential cross sections are in need for improving the accuracy of the RAON Nuclear Data Production System (NDPS), scheduled to be completed next year. One of the NDPS neutron sources uses thick carbon target bombarded by 98 MeV deuterons, where a good accuracy of neutron emitting spectra is inevitable for the engineering design of target, collimator, TOF, and detection systems.

- **SNF management** has been, and will be one of the national high priority problems to be coped since the number of NPPs to be shutdown starts to increase sharply in several tens of year. Budget decrease in SFR and pyro projects deepens this issue. A challenging proposal is under reviewing to precisely predict the pellet-wise discharge burnups in SNF assemblies through an ultra-fine grid numerical model with highly reliable M&S and nuclear data. Target accuracies of the isotopic densities in SNF are set, and corresponding uncertainties of the neutron nuclear data well as fission yields and decay data of actinides and fission products are being estimated.
- Nuclear data needs in Korea are still mostly from the field of the **SFR linked with the pyro-process** despite the shrinking situation, SFR project is in the stage of the proto-type designing, and needs to quantify the cross section uncertainties in the validation and verification of the neutronics calculations.
- Small Modular Reactor (SMR) are being developed in Korea, where a number of new materials are under study. **Thermal scattering laws** are especially to be improved, properly processed, or newly evaluated for the thermal SMR using such new materials
- Korean **ITER neutronics** team requires reliable fast neutron nuclear data of the key materials for its neutronics performance, shielding design and activation analyses. ITER neutronics team mainly uses FENDL 2.1 library implemented in MCNPX 2.5 while KAERI nuclear data center is improving the nuclear data of some key structural isotopes in parallel.